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Session 6. Planetary Nebulae: Young and Old
Display, Monday, January 8, 2001, 9:30am-7:00pm, Exhibit Hall

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[6.17] Near-Infrared Speckle Observations of Proto-Planetary Nebulae

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The study of evolved stars and their mass-loss is of great interest to the fields of both stellar and galactic evolution. One of the main observable components which traces mass-loss from evolved stars is dust. The transportation of this dust away from the star is a process which begins with stellar winds and ends in the formation of a planetary nebula (PNe). Here we present preliminary results of new near-infrared speckle imaging of four proto-planetary nebulae (PPNe) with Near-Infrared Camera at the Keck Observatory. The sources are resolved at the diffraction limit of the 10~m telescope, and at least one of them exhibits strong asymmetry. For our brightest source, RW LMi, we acquired narrow-band speckle images at O^+ (1.236 \mum), Br \gamma (2.165 \mum) and near a PAH feature (3.083 \mum), enabling us to study the wavelength dependence of the size and shape of this source.

Together with future spectroscopic observations, our new data will enable us to address three basic questions: 1) Whether the outflows are asymmetric; 2) Which chemical species are present, particularly in the shocked areas of the outflows; and 3) What are the principal excitation mechanisms in the outflows, as traced through moderate resolution spectroscopy of helium and molecular hydrogen lines.

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